

GLAST SSC Personnel

FY 2001

Currently, $\sim 2 \times 0.25$ FTEs:

Senior Programmer
SSC Head Scientist

FY 2002, Ramp up to ~ 8 FTEs, adding:

1 LAT Instrument Specialist
1 GBM Instrument Specialist
2 Algorithm Development Scientific Programmers
1 Pipelining Development Programmer
0.5 Web Tech
0.5 Admin. Asst.



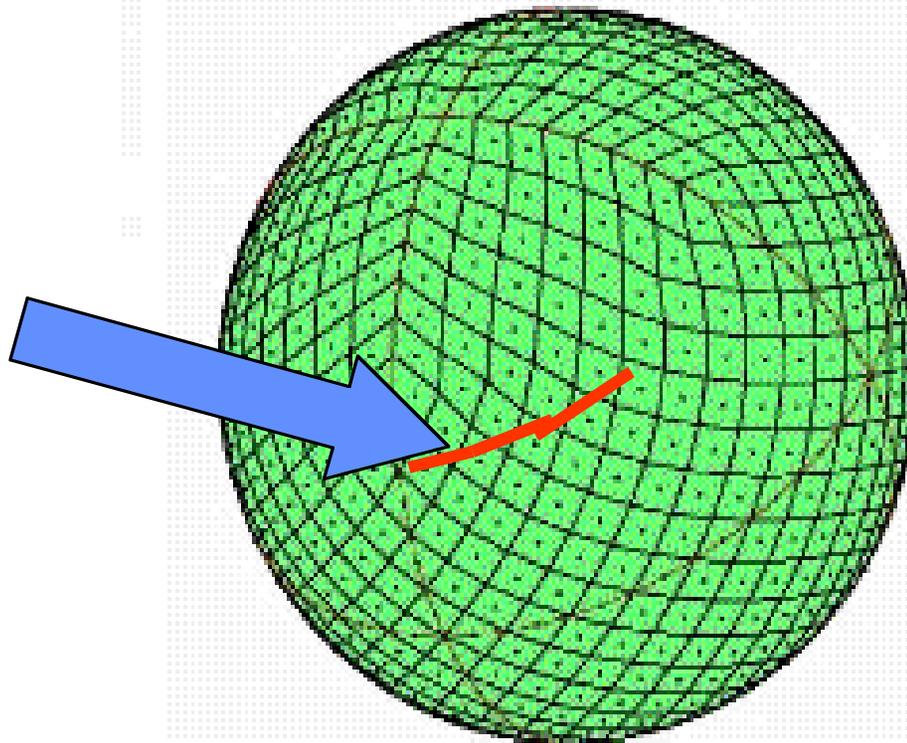
Where are we?

- **Exposure angle database:** ‘Lookup table concept’ eliminates ‘40GB/yr bad idea angle database’ - factor of ~15 speed up for angles-only portion of brute-force exposure calculation. And much less IO than big DB. Negligible increase in overall computation accuracy.
- **HEALPix tessellation scheme:** Initial trials indicate that this *iso-latitude, equal-area pixelization* scheme is appropriate for our needs. Software obtained and installed. (See: <http://www.eso.org/kgorski/healpix/>)
- **EGRET photon data:** Data for sky survey period obtained and reformatted, ready for DB trade study. Must create exposure scheme for it using HEALPix.



HEALPix

- Creates equal-area curvilinear quadrilaterals.
- Quadrilaterals are not the same shape.
- Pixels centers distributed on latitude lines.
- Quad-tree addressable
- Choice for the MAP & Planck missions.
- Software available in Fortran and IDL.



- 12 base pixels result in ~12K pixels at level 5.

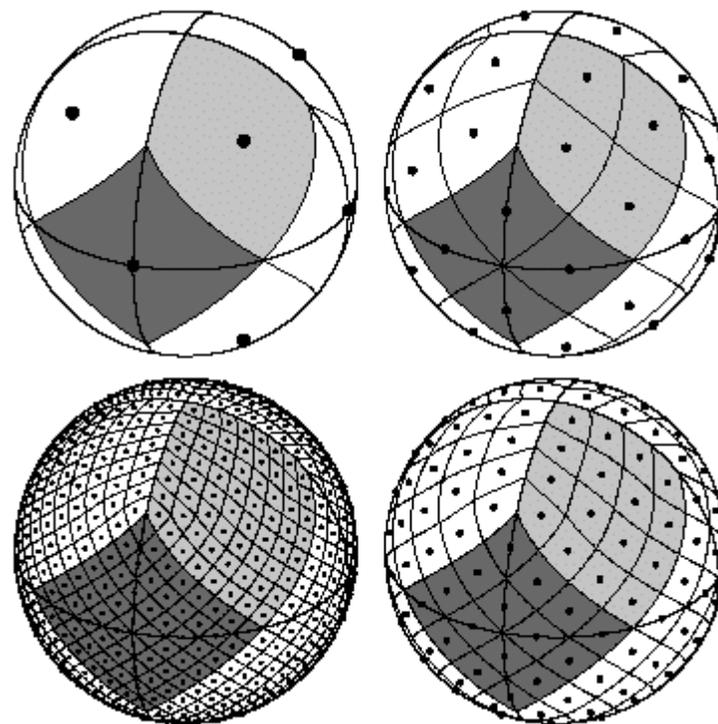


HEALPix subdivision scheme

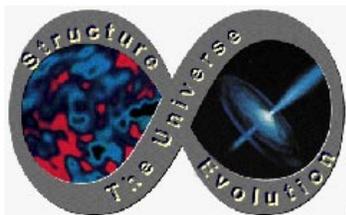
HEALpix root nodes are not all the same shape.

However, the subdivision scheme creates equal area pixels and centers are equidistant in azimuth

It was designed to speed applications involving spherical harmonics and has two different addressing schemes - quad and ring - depending on how you want to access the data.

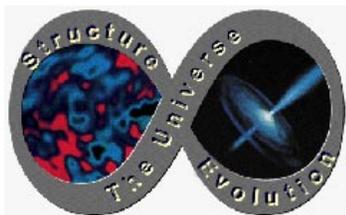


The ring addressing scheme numbers pixels around iso-latitudes



Simulating GLAST with Egret

- Several steps:
 - Sample EGRET photons spatially with correct proportions and with appropriate associated times.
 - Organize photons in a database (several possible database approaches are being considered).
 - Develop queries, e.g., to select data on the basis of time and spatial constraints.
 - Associate results of queries with the correct exposure maps (note that the exposure maps will need to be thought through if we change the ‘when’ of photons). Don’t know how to do this yet.



Bootstrap from EGRET photons ...

These 250,000 EGRET photons are part of nearly 1 million taken during the first 18 months of the GRO mission. They are just sprayed onto a flat sky.

To simulate GLAST realistically, we'll have to sample photons in a manner that mimics GLAST's survey mode.

